result is an almost certain fatal general tuberculosis. The process begins first in the mediastinum and rapidly extends to the lungs, liver, and kidneys. Opie found that this result could be delayed and in isolated cases cured by the intrapleural injection of a sterile purulent exudate. This sterile exudate is obtained by the intrapleural injections of turpentine in healthy dogs.

Typhoid Toxin Obtained by Means of Lecithin and its Immunizing Action.—BASSENGE (*Deut. med. Woch.*, 1908, xxix, 1257) supplements some observations previously reported. In the earlier observations Bassenge found that a 1 per cent. emulsion of lecithin in sterile distilled water had the property of dissolving typhoid bacilli. If this emulsion was introduced into the peritoneal cavity of guinea-pigs, the animals would be protected against subsequent intraperitoneal inoculation of typhoid bacilli, provided that a period of twenty-four hours had elapsed between the injections. In the present paper he confirms these results. He compared Merck's ovolecithin, brain lecithin, plant lecithin, and agfa-ovolecithin. A 1 per cent. emulsion seemed to be the maximum strength obtainable. To 20 c.c. of the lecithin emulsion, two loopfuls of a twenty-hour broth culture were added. In all of the experiments, all traces of living bacilli disappeared within twenty-four hours. Old ovolecithin seemed to have an almost instantaneous bacteriolytic action. 1 c.c. of the emulsion killed one-third of the animals, while 2 c.c. killed all. By regulating the dose of the emulsion, guinea-pigs were so immunized that they resisted twenty times the lethal dose of virulent typhoid bacilli. This result was obtained when an interval of from twenty to twenty-four hours between the injections was allowed to elapse. The control guinea-pigs died in from seven to nine hours. This immunity persisted as long as thirty-eight days. Bassenge concludes that lecithin is capable of setting typhoid toxins free in sufficient quantities to produce powerful antibodies when the emulsions are introduced for the purpose of immunization. He suggests that the lecithin emulsions may be of value in the treatment of typhoid fever in man. The lecithin may be removed from the emulsion by shaking the emulsion with chloroform and filtering through a Pukal filter.

Restriction of Fluids in Nephritis.—STRAUSS (*Berl. klin. Woch.*, 1908, xxi, 998) does not reject the opinions of Oertel and of von Noorden that large amounts of fluid increase the work of the heart in cases of cardiac insufficiency due to cardiac disease. However, he believes that other equally important factors exist in cases of cardiac insufficiency due to disease of the kidneys. He thinks that an increased amount of fluid is necessary for the removal of the poisonous substances and that their removal will more quickly lighten the work of the heart. He could not determine an increase of the blood pressure when large quantities of fluid were used. His observations on the urine and blood serum and certain animal experiments did show a diminution in the excretion of the poisonous products of metabolism when the amount of fluid was diminished. He, therefore, thinks it absolutely necessary to increase the amount of the fluids, even if an overburdening of the heart is a result. Rest in bed and digitalis should be used to combat this tendency to cardiac weakness. If the heart weakness is marked, Strauss advocates moderate amounts of fluid given in small frequent portions at fixed intervals. Strauss also believes that anasarca in nephritis is a compensatory measure, since the fluid may dilute the retained poisons. If increased fluids are given, the anasarca will disappear in many cases. On the other hand, the anasarca may increase, and then the removal of the fluid by aspiration results in the withdrawal of both fluid and poisonous bodies. If uremic symptoms occur Strauss increases the amount of fluid. Slow, rectal irrigations are of great service (drop method of Wernitz), though he warns of the possible damage to the kidneys from the use of sodium chloride solution.

The Serum Treatment of Chronic Nephritis.—CASPER and ENGEL (*Berl. med. Woch.*, 1908, xli, 1836) give an account of eleven cases of chronic nephritis treated with serum which they obtained in the following manner: 50 to 60 c.c. of blood was withdrawn by venesection from a given case of nephritis. This blood furnished 25 to 30 c.c. of serum which, after warming to 58° C., was injected in healthy dogs. The dogs were injected once or twice a week in gradually increasing doses until eight or ten injections had been given. The dogs were then bled and the serum obtained. This serum was injected in small doses in cases of nephritis until, after repeated injections, no constitutional reaction occurred. Then normal human serum and even at times normal animal serum was injected for the purpose of supplying the complement. Their findings were as follows: (1) The treatment is harmless. (2) In some cases the amount of albumin and the number of casts in the urine remained the same; in others, they diminished and even entirely disappeared. (3) In all the cases, the general condition was benefited. (4) The œdema disappeared. They believe that the serum has no effect on the kidney tissue already diseased, but that it may prevent the extension of the process. They explain in this way the apparent absence of effect upon the amount of the albumin and number of the casts in some of the cases in which the other symptoms improved.

The Action of Arsenic on the Red Blood Corpuscles and a Theory of the Blood Defect in Pernicious Anemia.—GUNN (*Brit. Med. Jour.*, 1908, 2481, 145) draws the conclusions from his experiments that arsenious acid forms a fixed combination with red blood cells and acts as a protective agent against hemolytic agencies. His experiments were concerned with the hemolytic action of distilled water. The protective action of arsenic was perceptible when the experimental solution was as weak as one in 400,000 The ordinary maximum dose of arsenic is 0.005 gram, and if this was all absorbed, the amount of arsenic in the blood would be one in a million. However, arsenic is frequently given in larger doses in the organic combinations, and it is very slowly eliminated. Furthermore, arsenic seems to attach itself so rapidly and so firmly to the red blood cells that it is probable that the drug is largely taken up by them. Therefore, he believes that arsenic is of benefit in pernicious anemia because it prevents the destruction of the red blood cells. He also believes that arsenic protects the red blood cells from invasion by the malarial parasite, but that it does not destroy the parasite. His theory of pernicious anemia is not an entirely new one. He thinks that the defect is not in the hemoglobin, but in the stroma of the red blood cells; that the stroma has a deficiency of lecithin and cholesterin; that the lack of rouleaux formation of the red blood cells in pernicious anemia points to a deficiency of fats; that these lipoid substances are lecithin and cholesterin; and that the poikilocytosis and irregular staining characteristics are additional reasons for assuming such a deficiency. On the basis of this theory, the beneficial effects of extracts of bone marrow may be explained, for bone marrow is rich in lecithin and cholesterin.

PEDIATRICS.

UNDER THE CHARGE OF

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Present Knowledge of Whooping-cough.—H. H. DONNELLY (*Archives of Pediatrics*, 1908, xxv, 819) writes concerning whooping-cough as follows: The mortality from whooping-cough is exceeded only by that from typhoid fever and from diphtheria, all other epidemic diseases having fewer fatalities. In 1906 there were 6324 deaths due to it, 96 per cent. occurring in children. Of every 37 deaths occurring in children in 1906, one was due to whooping-cough. It is chiefly a disease of early childhood; premature infants may contract it, 20 per cent. of the cases occurring in infants less than a year old, while 66 per cent. occur in children under five. The ratio of girls and boys is 6 to 5. It occurs more frequently during raw and inclement weather. An organism indistinguishable from the influenza bacillus has been isolated from the sputum by a number of observers. The serum of whooping-cough cases produces marked agglutination of these bacilli in dilutions of 1 to 200 to 500. Deaths in whooping-cough are usually due to its complications (bronchopneumonia, tuberculosis, emphysema, cardiac disease, cerebral hemorrhage). Tracheobronchial catarrh is constant in these cases. The contagion persists throughout its entire course, and is especially marked in its early stage. The contagion is usually direct. The period of incubation is unknown. The clinical symptoms are readily recognized, when the disease is well developed; during the early stage the child complains of lassitude, headache, disturbed sleep, catarrh of the upper air passages, cough; slight fever may be present. Blood examination shows an increased leukocyte count with lymphocytosis. Puffiness and bloating of the face are marked between paroxysms; they are due to venous and lymphatic stasis. A few rales before the paroxysm, followed by signs of emphysema afterward are the only chest signs present in an uncomplicated case. There is an increase of uric acid secretion. The average duration is from eight to twelve weeks. The complications are chiefly due to the mechanical effects of the cough, the extent of the infection, and the lowering of the general tone rendering other infections possible. The treatment includes attention to hygiene, ventilation, clothing, and diet. A rational fresh air treatment should be carried out; an abdominal belt made of linen relieves vomiting and lessens the paroxysm. Local antiseptics should be used; of drugs, quinine and antipyrine have more advocates than others.

A New Treatment for Old Tuberculous Sinuses.—J. Ridlon and W. Blanchard (*Amer. Jour. Orth. Surg.*, 1908, vi, 13) treated 26 children having old tuberculous sinuses with Beck's bismuth-vaselin paste. A paste made up of 2 parts of vaselin to 1 part of bismuth was injected and a skiagram taken showing the ramifications of the sinuses. This injection was usually expelled within twenty-four hours. Then a paste made up of 6 parts of bismuth subnitrate, 1 part of white wax, 1 part of soft paraffin, and 12 parts of vaselin (mixed while boiling) was injected into the fistulous opening until it would hold no more without painful distention; all or part of it was usually retained. The paste must be at blood heat at the time of injection. The amount discharged into the dressing was re-injected every two to three days. Favorable cases retain the bismuth, the opening healing over in from one to three weeks. In cases with extensive bone destruction several sinuses are usually injected from two to three times weekly, the pus then escaping from the others. If the pus disappears within a few weeks, assurance may be given that months of persistent treatment will cure the sinuses. If the pockets are so situated that the bismuth cannot be forced in to displace the pus, the results will always be negative. Ridlon and Blanchard ascribe the curative action to the bismuth acting in a mechanical way. The pus is forced out by the plug, which then so completely fills the sinus, as to prevent the ingress of air-carrying germs; lastly it compresses the unhealthy granulating surfaces, a normal healing process naturally resulting. Of the 26 cases, 6 were cured with a single injection, 7 with from two to fifteen injections, 7 were improved, 1 unchanged, and 5 are still under treatment.

A Contribution to the Study of Tuberculin in Orthopedic Practice.—C. Ogilvy (*Amer. Jour. Orth. Surg.*, 1908, vi, 35) employed tuberculin according to Calmette's ophthalmotuberculin test in 40 children from the standpoint of diagnosis; in 30 the reaction was positive, in 10 negative. Of the latter, 9 were non-tuberculous. The negative reaction in cases known to be tuberculous has been claimed by some to be due to a condition of low resistance—low opsonic index as occurs in the negative phase; this is probably the case in the tenth instance, which was one of known tuberculous hip-joint disease. Six patients were treated with injections of tuberculin, and the following conclusions were drawn from the observations by Ogilvy: By means of the opsonic index we have learned the importance of small doses of tuberculin, and the time at which they should be administered. But this having been learned, it is by no means necessary, nor is it practical, to follow up the treatment with control indices. For the diagnosis of tuberculous bone and joint disease the opsonic index is of little practical value. Tuberculin in small doses at proper intervals is of undoubted value in the treatment of selected cases of tuberculous bone and joint infections. The rise of the opsonic index is accompanied by an improvement in the local and